

Biomaterials – A Global Market Overview

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Abstracts

Global Biomaterials Market Trends and Outlook

Biomaterials are natural or synthetic materials designed for interaction with biological systems in medical applications aimed at supporting, mending, or substituting damaged tissues or organs. These materials, which include metals, ceramics, polymers, and natural substances, are essential in various fields such as cardiovascular, orthopedics, dentistry, neurology, and plastic surgery applications. Biomaterials are used in products such as implants, stents, artificial joints, pacemakers, and tissue regeneration scaffolds. With characteristics such as biocompatibility, mechanical strength, and biodegradability, biomaterials improve medical outcomes by integrating effectively with living tissues. Their adaptability also extends to advanced technologies, including drug delivery systems, wound healing products, regenerative medicine, and plastic surgery, where they facilitate tissue growth, recovery, and cosmetic enhancements. The rising success of biomaterials is fueled by advancements in material science, enhanced surgical methods, and a greater comprehension of the relationship between biological systems and biomaterial-based devices. Biomaterials are essential to modern healthcare, playing a key role in improving patient outcomes and advancing medical knowledge.

The increasing incidence of cardiovascular diseases, orthopedic issues, arthritis, and sports injuries is increasing the demand for implantable biomaterials as chronic health conditions worsen due to unhealthy lifestyles and an aging demographic. Furthermore, the expansion of regenerative medicine, improvements in 3D printing and additive manufacturing, and breakthroughs in biodegradable biomaterials are driving the market expansion. The shift towards personalized medicine, the integration of nanotechnology, and the use of biomaterials in wound healing, tissue regeneration, and drug delivery systems are also contributing to growth. Furthermore, increased healthcare expenditures and government support for research and development, particularly in developing countries, enhance the demand for biomaterials. The growing elderly

population, along with the rise in musculoskeletal disorders and chronic ailments like diabetes and cardiovascular diseases, is boosting the need for advanced implantable devices and medical technologies. Simultaneously, innovations in smart biomaterials and collaborative efforts within the healthcare sector are driving sustained market expansion.

Biomaterials Regional Market Analysis

In 2024, North America held 37.5% of the global biomaterials market, driven by a robust healthcare infrastructure, strong government R&D support, and a high prevalence of orthopedic and cardiovascular issues. The region's dominance is bolstered by key market players, technological advancements, and favorable regulatory frameworks, including FDA approvals. The growing demand for advanced biomaterials in implants and wound care further strengthens North America's leadership. Conversely, the Asia-Pacific region is projected to experience the fastest growth, with a CAGR of 15.8% during the forecast period 2024-2030, driven by improvements in healthcare infrastructure, rising healthcare spending, and a growing need for orthopedic, cardiovascular, and dental biomaterials. Countries like China, India, and Japan are making significant contributions, as their expanding middle-class populations, economic development, and government initiatives for healthcare

Biomaterials Market Analysis by Type

Metallic biomaterials dominated the global market in 2024 with an estimated share of 37.7%, owing to their strength, compatibility with biological systems, and resistance to corrosion, particularly in orthopedic implants, dental devices, and cardiovascular applications. Titanium, stainless steel, and cobalt-chromium alloys are key materials due to their durability and ability to maintain structural integrity over the long term. In contrast, the polymers segment is expected to witness the fastest growth, with a projected CAGR of 14.9% during the 2024-2030 analysis period, driven by their application in soft tissue treatments, plastic surgery, and advances in tissue engineering. Their adaptability, biocompatibility, and recent innovations, such as self-healing properties, make them well-suited for advanced medical applications, further boosting their market growth.

Biomaterials Market Analysis by Application

The orthopedic application segment is expected to dominate with a 27.7% share in 2024, primarily due to the increasing use of metallic biomaterials, which are favored for

their excellent load-bearing capabilities in orthopedic implants. Ongoing developments and investments in orthopedic implants are driving market expansion. In orthopedics, biomaterials aid in tissue regeneration and the repair of bones, cartilage, and ligaments. Conversely, the plastic surgery segment is anticipated to experience the fastest growth, with a CAGR of 16.5% from 2024 to 2030. This rapid growth is driven by the rising demand for cosmetic procedures and reconstructive surgeries, along with advancements in biomaterial technologies, including customizable implants and 3D-printed scaffolds. The growing aging population and the desire to maintain a youthful appearance further boost the demand for biomaterials in plastic surgery.

Biomaterials Market Report Scope

This global report on Biomaterials analyzes the global and regional markets based on type and application for the period 2021-2030 with forecasts from 2024 to 2030 in terms of value in US\$. In addition to providing profiles of major companies operating in this space, the latest corporate and industrial developments have been covered to offer a clear panorama of how and where the market is progressing.

Key Metrics

Historical Period: 2021-2023

Base Year: 2024

Forecast Period: 2024-2030

Units: Value market in US\$

Companies Mentioned: 35+

Biomaterials Market by Geographic Region

North America (The United States, Canada and Mexico)

Europe (Germany, The United Kingdom, France, Spain and Rest of Europe)

Asia-Pacific (Japan, China, India, South Korea and Rest of Asia-Pacific)

Rest of World (Brazil, Middle East and Other Countries)

Biomaterials Market by Product

Metallic

Polymers

Ceramics

Natural

Biomaterials Market by Application

Orthopedic

Cardiovascular

Dental

Plastic Surgery

Neurology

Ophthalmology

Tissue Engineering

Wound Healing

Other Applications (Drug Delivery Systems, Gastrointestinal Applications, Bariatric Surgery, Urinary Applications)

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Dental

Plastic Surgery

Neurology

Ophthalmology

Tissue Engineering

Wound Healing

Other Applications (Drug Delivery Systems, Gastrointestinal Applications, Bariatric Surgery, Urinary Applications)

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BASF SE

3-D Matrix, Inc

aap Implantate AG

Abbott Laboratories

Acumed LLC

Arthrex, Inc.

Artivion, Inc.

B. Braun Melsungen AG

Baxter International Inc.

Berkeley Advanced Biomaterials

Biocomposites Ltd.

Biomaterials Korea, Inc.

Boston Scientific Corporation

CAM Bioceramics B.V.

Carpenter Technology Corporation
Celanese Corporation
Ceramtec GmbH
Collagen Solutions Plc
CoorsTek Inc.
Corbion N.V.
Covalon Technologies Ltd.
Dentsply Sirona Inc.
DSM-Firmenich
Evonik Industries AG
Exactech, Inc.
Heraeus Medical GmbH
Invibio (part of the Victrex plc group)
Johnson & Johnson
Medtronic plc
MilliporeSigma
Organogenesis, Inc.
Regenity Biosciences
RTI Surgical, Inc
Smith & Nephew Plc
Straumann Holding AG
Stryker Corporation
Syensqo SA
Zimmer Biomet Holdings, Inc.

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Global Biomaterials Market Overview by Product

Biomaterials Product Market Overview by Global Region

Metallic

Polymers

Ceramics

Natural

Global Biomaterials Market Overview by Application

Biomaterials Application Market Overview by Global Region

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Cardiovascular

Dental

Plastic Surgery

Neurology

Ophthalmology
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Other Applications

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Brazilian Biomaterials Market Overview by Application

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Middle East Biomaterials Market Overview by Product

Middle East Biomaterials Market Overview by Application

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